

NEW SPECIES OF *RHYACOPHILA* FROM CALIFORNIA
(TRICHOPTERA: RHYACOPHILIDAE)

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In this paper two new species of *Rhyacophila* and the female of *Rhyacophila spinata* Denning are described. All were collected from the western half of the Foresthill Divide in Placer County, California. The types are in the author's collection and will eventually be deposited in the Entomology collection of the California Academy of Science, Golden Gate Park, San Francisco.

Rhyacophila darbyi, new species
(Figs. 1a-d)

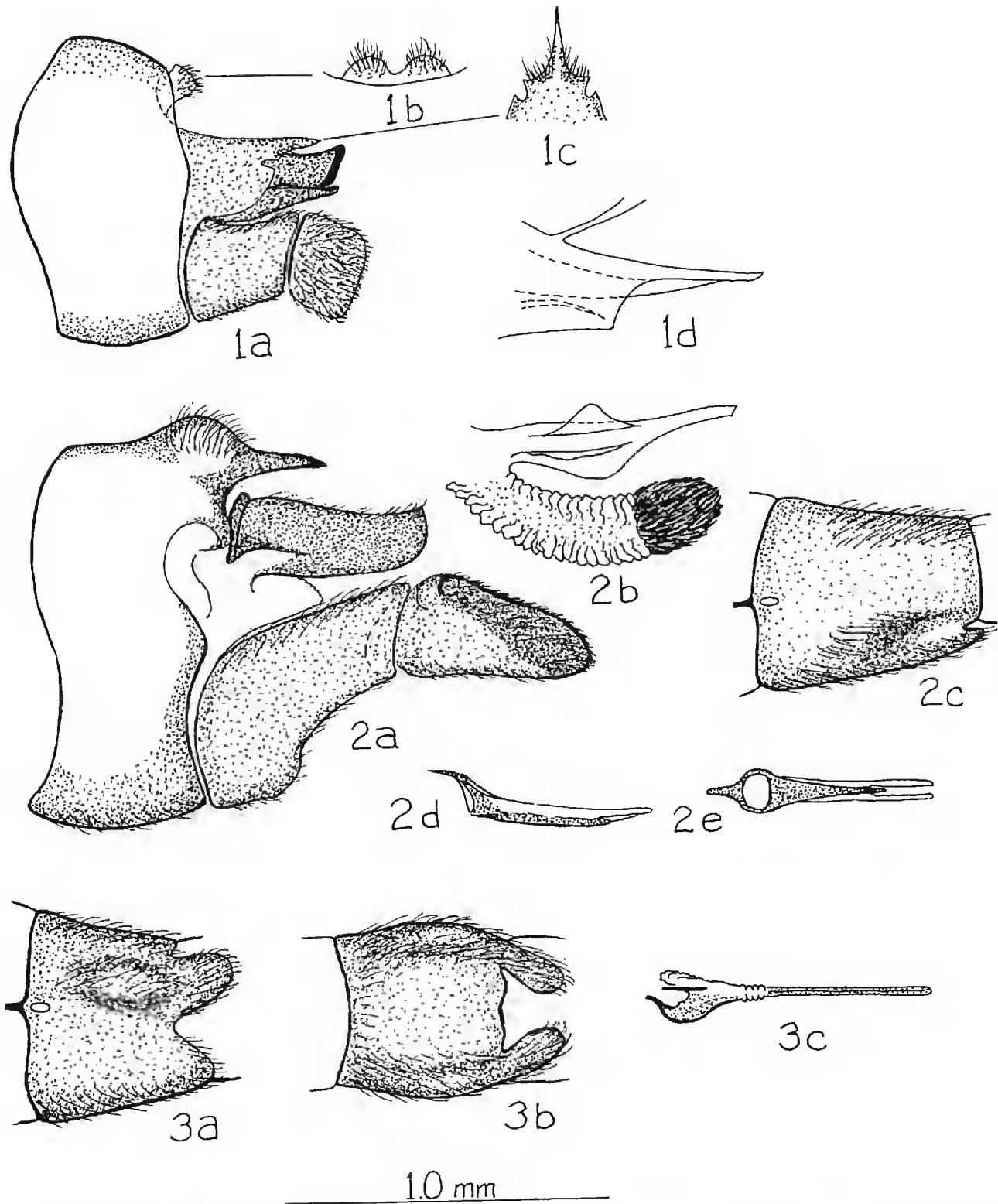
The species is tentatively placed in the *ecosa* group although there is a resemblance to *R. lineata* Denning in the *viquaea* group. Until the female and additional specimens are collected this placement will remain tentative. Diagnostic differences from described species are the emarginated margin of the ninth tergite, the subquadrate second clasper segment, and the peculiar phallus complex.

Male.—Length to apex of folded wings 10.3 mm. General color fuscous but darker dorsally, especially on head. Sternum 7 with minute mesal process. Genitalia as illustrated (Fig. 1). Segment 9, lateral aspect, widest medially, anterior margin arcuate; from dorsal aspect distally emarginate (Fig. 1b). Preanal plates large, posterolateral margin emarginated (Fig. 1a); dorsal margin acuminate from lateral or dorsal aspect (Fig. 1c). Tergum 10 partially obscured by preanal plates; heavily sclerotized, from lateral aspect apical margin obliquely truncate, black pigmented. Anal sclerite, lateral aspect (Fig. 1a) heavily sclerotized and elongate, apex black pigmented dorsally. Clasper basal segment short, rhomboid, the semi-quadrate distal segment densely covered mesally with short pubescence. Phallus structure (Fig. 1d): basal capsule elongated into lateral arms which lie alongside the lightly sclerotized phallicata; ventral to this structure are two small ventrad curved spines.

Female.—Unknown.

Holotype male.—Shirttail Creek near western edge Tahoe National Forest, 3500', Placer County, California, 9 June 1974, W. C. Fields, Jr.

It is with pleasure that I name this new species in honor of my former teacher at California State University, Sacramento, Professor R. E. Darby.



Figs. 1-3. Fig. 1. *Rhyacophila darbyi* Fields, male genitalia, 1a, lateral aspect; 1b, 9th tergite, dorsal aspect; 1c, preanal plates, dorsal aspect; 1d, phallus complex, lateral aspect. Fig. 2. *Rhyacophila acuminata* Fields, male and female genitalia; 2a, male genitalia, lateral aspect; 2b, phallus complex, lateral aspect; 2c, female 8th segment, lateral aspect; 2d, bursa copulatrix, lateral aspect; 2e, bursa copulatrix, ventral aspect. Fig. 3. *Rhyacophila spinata* Denning, female genitalia; 3a, 8th segment, lateral aspect; 3b, 8th segment, dorsal aspect; 3c, bursa copulatrix, lateral aspect.

***Rhyacophila acuminata*, new species**
(Figs. 2a–e)

This species is a member of the *acropedes* group and is probably closest to *R. inculta* Ross and Spencer. Diagnostic characters are the prominent bulbous projection of the dorsum of segment 9 and the peculiar dorsal process of the phallus complex.

Male.—Length 13 mm to tip of folded wings. General color brownish. Wings faintly irrorate. Sternum 7 with minute mesal process; segment 5 with subpleural tubercle. Genitalia as in Fig. 2. Lateral margin segment 9 sinuate; tergum projecting dorsocaudad, bulbous, setose, distally acuminate, directed caudad approximately one-third length of segment 10 (Fig. 2a). Segment 10 similar to other members of the group; from lateral aspect caudal margin curved dorsad, structure projected beyond basal clasper segment. Phallus complex generally similar to other members of the *acropedes* group; extensile semimembranous parameres with apical pads of dark brown closely appressed setae; base of dorsal process bears dorsolateral flanges, ventrolateral ridges, and a short ventral keel (Fig. 2b). Clasper basal segment directed dorsocaudad, compressed laterally; apical segment gradually narrowed caudally to obtuse apex with dense short black pubescence dorsomedially.

Female.—Length 13 mm. Similar to male in general color and size. Sternum 6 with minute mesal process. Genitalia as in Fig. 2c, d, e. Base of segment 8 heavily sclerotized, pubescent, with median posteroventral keel, distally obtuse and slightly separated from remainder of segment (Fig. 2c). Bursa copulatrix a lightly sclerotized ring projecting anteriorly into dorsal point, caudally into parallel arms and with a ventral keel, Fig. 2d, e.

Holotype male.—Shirrtail Creek, near western edge Tahoe National Forest, 3500', Placer Co., Calif., 25 August 1974, W. C. Fields, Jr. Allotype female, same data as for holotype. Paratypes, 5 males, 2 females, same data as holotype. Additional specimens not in type series: 2 males, Lady's Canyon, 2300', tributary to Middle Fork American River southeast of Foresthill, Placer Co., May 1978; 4 males, 1 female, Lady's Canyon, 5 May 1978, W. C. Fields, Jr. Larvae of the *acropedes* group have been collected from Shirrtail Creek, 25 August 1974, but until these can be reared I can only postulate that they are the larvae of *R. acuminata* n. sp.

Rhyacophila spinata Denning

The unusual male of this species is described and figured by Denning (1965). The female is described here for the first time.

Female.—Length 14 mm to tip of folded wings. General color dark brown, darker than associated males; abdomen purplish brown dorsally. Wings brown, irrorate. Sternum 6 with minute mesal process. Genitalia as in Fig.

3. From dorsal aspect, anterior margin of segment 8 heavily sclerotized with pronounced emargination (Fig. 3b); from lateral aspect, deep triangular incision (Fig. 3a); segment expanded laterally. Segments 9, 10, and 11 may be withdrawn entirely into segment 8. Bursa copulatrix elongate, lightly sclerotized, scoop-shaped proximally, surmounted by a membranous lobe, and distally attenuated (Fig. 3c).

Female.—Lady's Canyon, 2300', southeast of Foresthill, Placer Co., Calif., 13 March 1976, W. C. Fields, Jr., 5 males, 2 females, same data.

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Literature Cited

- Denning, D. G. 1965. New Rhyacophilids and Limnephilids (Trichoptera: Rhyacophilidae and Limnephilidae). *Can. Entomol.*, 97:690-700.